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Revision of the Genus *Harmstonia* (Diptera: Dolichopodidae)

By Harold Robinson
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In a previous paper on the Dolichopodidae (1964), I described the genus *Harmstonia* and included in it two previously undescribed species occurring in the eastern United States. At that time a number of additional species were already known to occur in Mexico. More recently, specimens of a Costa Rican species have been obtained from the Melander Collection, which is now housed at the U.S. National Museum, and a West Indian species has been collected by various participants in the Bredin-Archbold-Smithsonian Biological Survey of the island of Dominica. In the present paper, descriptions and a key are provided for the 13 species now known in the genus.

Genus *Harmstonia* Robinson

Small, 1–2 mm long, dark metallic green with mostly dark bristles. Face of male grayish pollinose, extremely narrow in lower half, sides diverging above and continuous with diverging sides of the front; face of female somewhat wider with a few setae at the lower third; palpus dark with small hairs; pseudotracheae of the labellae rudimentary with irregular thickenings; antenna brown or black, all segments short; segment 1 bare above; segment 2 truncate; segment 3 blunt or short-pointed, with arista inserted dorsally; lower postocu-

lar setae uniseriate. Mesoscutum strongly arched with posterior slope distinctly flattened, with grayish or brownish pollen toward sides; acrostichals absent; 5 pairs of large dorsocentrals; 2 scutellars, a small hair on the lateral scutellar margin; pleural surface with grayish pollen. Femora with preapicals usually weak, sometimes not distinct. Longitudinal veins of wing straight to slightly curved, all, including veins 3 and 4, diverging for most of length; crossvein nearly as long as or longer than last part of vein 5; vein 6 totally absent. Calypter pale with dark margin and some dark setae. Abdomen short, tapering; hypopygium sessile, usually large and projecting somewhat forward under the abdomen.

Type-species: *H. intricata* Robinson, original designation.

The species occur on soil or rocks at edges of streams and lakes or on moist rock surfaces near seepage and waterfalls. They sometimes alight but more frequently hover close to the surface of the substrate. The species may be very particular regarding positions where they alight and the males of some species seem to favor slightly different habitats from the females.

Most collections of *Harmstonia* have come from limestone regions. The genus is apparently absent from regions of North Carolina where limestone is conspicuously lacking. Recently I have collected *H. intricata* along a stream flowing over aged serpentine but pH was not checked. One species is found on the West Indian island of Dominica, which is primarily volcanic in origin, but the Dominican streams that have been tested show a rather high pH.

Key to the Species of *Harmstonia*

1. Foretibia with a distinct row of anterodorsals, hind tibia usually with a distinct row of posterodorsals; hypopygial lamella broadly oval or elliptical and rounded apically 2
   Fore- and hind tibiae without rows of prominent dorsals; hypopygial lamellae (except *H. intricata*) bearing obvious slender apical projections 7
2. Hind tibia with short stout black apical and subapical setae; hypopygial lamella covered with hairs; face of female bearing two distinct setae . . 3
   Hind tibia without distinct black apicals and subapicals; surface of hypopygial lamella glabrous; face of female with three to six distinct setae . . 4
3. Femora blackish; middle tibia with two anterodorsals; abdomen of male straight (Mexico) . . . . . **H. recta,** new species
   Legs including femora yellow; middle tibia with one anterodorsal; abdomen of male curved (Mexico) . . . . . **H. pubescens,** new species
4. Legs totally brown; body and wings both over 1.5 mm long; hypopygium large, over 0.5 mm long (Mexico) . . . . . **H. megalopyga,** new species
   Legs partly yellow; body and wings less than 1.25 mm long; hypopygium distinctly less than 0.5 mm long 5
5. Knob of halter pale (Mexico) . . . . . **H. ornata,** new species
   Knob of halter black or brown 6

6. Male hind tibia with a row of indistinct posterodorsals, hind femur with sparse slender setae along posteroventral surface (Costa Rica).
H. costaricensis, new species

Male hind tibia with a row of very prominent posterodorsals, hind femur with many close-set setae along distal half of posteroventral surface (Mexico) . . . . . **H. setosa**, new species

7. Knob of halter black or brown, rarely pale brown; hypopygial lamella bearing branched setae 8

Knob of halter yellow; hypopygial lamella without branched setae 9

8. Hypopygium over ⅓ as long as the body, bearing large lamellae; hind femur of the male bearing a fringe of short setae along the anteroventral surface (eastern U.S., Mexico) . . . . . **H. pectinicauda** Robinson

Hypopygium about ¼ as long as the body, bearing very small lamellae; male hind femur without evident fringe anteroventrally (Dominica).
H. simplex, new species

9. Legs mostly or wholly brown. 10

Legs mostly yellow 11

10. Hypopygium bearing large pale rounded lamellae; all femora of the male fringed with long hairs ventrally; face of female with two large setae (eastern U.S.) . . . . . **H. intricata** Robinson

Hypopygial lamellae mostly blackish and bearing projections apically; femora of male without distinct setae ventrally; face of female with three to four setae (Mexico) . . . . . **H. obscura**, new species

11. Front with yellowish gray pollen; antennal segment 3 rounded; abdomen of male only slightly curved downward, hypopygium usually borne under the tip; face of female with two or rarely three setae (Mexico).
H. pallida, new species

Front with brown pollen; antennal segment 3 truncate apically; abdomen of male curved distinctly downward with hypopygium borne on tip; face of female with four small setae. 12

12. Hypopygial lamella ending in a long attenuate tip (Mexico).
H. attenuata, new species

Hypopygial lamella ending in a short hooklike point (Mexico).
H. clavicauda, new species

The genus can be divided into three rather distinct groups.

Group I (Typical)

Legs bearing only weak setae, hypopygial lamellae bearing slender apical projections or a bulbous base. The group contains the following seven species.

Harmstonia intricata Robinson

FIGURES 1, 14

Harmstonia intricata Robinson, 1964, p. 123 [type-species by original designation].

MALE.—Length 1.15 mm; wing 1.32 mm by 0.51 mm. Front grayish yellow; antennal segment 3 (fig. 14) short, truncate to slightly rounded below. Basitarsi except tips pale, legs otherwise brown; all femora fringed with long setae below, middle and hind femora with

weak preapicals; fore- and hind tibiae without prominent dorsals or apicals, middle tibia with a weak anterodorsal and a weak posterodorsal near basal third; lengths of segments of foretarsus from base as .16–.09–.06–.05–.06 mm; middle tarsus as .21–.09–.07–.05–.05 mm; hind tarsus as .16–.14–.09–.06–.06 mm. Tips of wing veins 2 and 3 are 1⅓ times as far apart as tips of veins 3 and 4, vein 3 very slightly curved to become nearly parallel with 4 distally; crossvein as long as last of vein 5; knob of halter pale yellow. Hypopygium (fig. 1) ca. .35 mm long; hypopygial lamella broad and rounded apically, with bulging pale inflated area at base, with a slender inward projection from middle of lower margin.

FEMALE.—Face bearing two large setae; femora without long setae below.

TYPE-DATA.—Holotype ♂ and allotype ♀ from Knox County, Tenn. (USNM 69429).

DISTRIBUTION.—*H. intricata* is known only from the eastern U.S., having been collected in eastern Tennessee, northern Virginia, Maryland, and central New York.

NOTES.—The hypopygial lamellae of *H. intricata* are unique for Group I in having a broad rounded apical portion and lacking any slender apical projections. The pale bulbous region of the lamella base, however, clearly relates *H. intricata* to other species in the group. Such a hyaline or bulbous area is present to some extent in most species of the group and is particularly well developed in *H. pectinicauda*. In all cases the surface of this hyaline or bulbous area bears some scattered setae.

While collecting specimens from a muddy rut at the type-locality in Tennessee, I noticed that the males were collected from the drier parts of the rut, but females were apparently restricted to the part containing some standing water.

Harmstonia pectinicauda Robinson

FIGURES 2, 15

Harmstonia pectinicauda Robinson, 1964, p. 123.

MALE.—Length 1.00 mm; wing 1.17 mm by 0.42 mm. Front brownish or grayish; antennal segment 3 (fig. 15) short, nearly truncate, lower part projecting forward somewhat beyond end of dorsal edge. Basitarsi except tips and tibiae pale, legs otherwise brown; hind femur with distinct row of short setae along anteroventral surface, middle and sometimes hind femur with weak preapical; fore- and hind tibiae without prominent dorsals or apicals, middle tibia with a weak anterodorsal and a weak posterodorsal near basal third; lengths of segments of foretarsus from base as .13–.07–.06–

.05–.06 mm; middle tarsus as .17–.08–.06–.04–.06 mm; hind tarsus as .13–.14–.09–.07–.07 mm. Tips of wing veins 2 and 3 are 1¼ times as far apart as tips of veins 3 and 4, vein 3 only very slightly curved and not becoming parallel with 4 distally; crossvein as long as or slightly longer than last of vein 5; knob of halter blackish or rarely brownish. Hypopygium (fig. 2) ca. .36 mm long; hypopygial lamella mostly brownish, long and slender, bearing numerous branched setae, with bulging pale inflated area at base, with a small hooked projection on the lower margin.

FEMALE.—Face bearing two large setae; hind femur without distinct setae along anteroventral surface.

TYPE-DATA.—Holotype ♂ and allotype ♀ from Frederick County, Va. (USNM 66492).

DISTRIBUTION.—*H. pectinicauda* has been collected both in the United States, from northern Virginia, and in Mexico, from San Luis Potosi, Hidalgo, Veracruz, Guerrero, Oaxaca, and Chiapas.

NOTES.—Specimens mounted on microscope slides show a crest of five small setae ventrally on the hind trochanter. The other species I have mounted on slides do not show such setae.

The Mexican specimens seem like those from Virginia in all details of structure but the tibiae tend to be paler. Three specimens from El Salto in San Luis Potosi show pale brown rather than black knobs on the halters.

Among the Virginia specimens the males were obtained only in direct sunlight. Females seemed to have no preference.

Harmstonia simplex, new species

FIGURES 3, 16

MALE.—Length 1.00 mm; wing 1.17 mm by 0.42 mm. Front brown; antennal segment 3 (fig. 16) shortly acute. Trochanters, distal parts of tibiae, and bases of basitarsi pale, legs otherwise brown; middle and hind femora with a few longer setae along ventral surfaces, middle femur with a weak preapical; fore- and hind tibiae without prominent dorsals or apicals, middle tibia with a weak anterodorsal and a weak posterodorsal near basal third; lengths of segments of foretarsus from base as .13–.07–.06–.05–.06 mm; middle tarsus as .17–.11–.07–.06–.06 mm; hind tarsus as .13–.15–.09–.06–.06 mm. Tips of wing veins 2 and 3 are 1¼ times as far apart as tips of veins 3 and 4, veins 3 and 4 essentially straight and not becoming nearly parallel; crossvein about as long as last of vein 5; knob of halter black or brown. Hypopygium (fig. 3) ca. .25 mm long; hypopygial lamella rather brownish, small and slender, bearing small branched setae, with small pale somewhat bulging area at base, with a small hooked projection on the lower margin.

FEMALE.—Face bearing two small setae, antennal segment 3 (fig. 16) blunt; femora without distinct setae along ventral surfaces.

TYPE-DATA.—Holotype ♂ and allotype ♀ from Dominica: Clarke Hall, Feb. 11–20, 1965, W. W. Wirth (USNM 69430). Paratypes: Clarke Hall (including specimens from Manets Guter, coconut grove, cocoa trail, and specimens from light and malaise traps) Jan. 8–Mar. 20, 18 ♂, 23 ♀; Macoucheri River, Jan. 14, 12 ♂; Macoucheri River, seashore and river mouth, Mar. 15, 5 ♂; Cabrits Swamp, Feb. 2–3, Mar. 22–25, 2♀; Fond Figues, Feb. 9, Mar. 9–12, 4 ♂, 1 ♀; Hodges River mouth, Feb. 27, 1 ♂, 2 ♀; Woodford Hill, Feb. 27, swamp forest, 1 ♂; all from Dominica, 1965, W. W. Wirth. Additional paratypes: Clarke Hall, Jan. 22–29, 21 ♂, 42 ♀; same locality, Feb. 28, 2 ♂; Deux Branches, Pagua River, Feb. 3, 3 ♂, 3 ♀; near Belfast, Jan. 31, 1 ♂; all from Dominica, 1964, H. Robinson.

NOTE.—*H. simplex* is the only species of *Harmstonia* in which I have observed distinct sexual dimorphism of the third antennal segment.

Harmstonia obscura, new species

FIGURE 4

MALE.—Length 1.00 mm; wing 1.17 mm by 0.42 mm. Front brown; antennal segment 3 short, rounded. Legs brown; middle femur with a weak preapical; fore- and hind tibiae without prominent dorsals or apicals, middle tibia with a weak anterodorsal and a weak posterodorsal near basal third; lengths of segments of foretarsus from base as .11–.05–.04–.04–.05 mm; middle tarsus as .15–.06–.05–.04–.05 mm; hind tarsus as .13–.13–.08–.05–.06 mm. Tips of wing veins 2 and 3 are 1¼ times as far apart as tips of veins 3 and 4, veins 3 and 4 essentially straight and not becoming nearly parallel; crossvein 1 to 1¼ times as long as last of vein 5; knob of halter yellow. Hypopygium (fig. 4) ca. .25 mm long; hypopygial lamella blackish, broad with two prominent distal projections, with a small hyaline area in middle of base.

FEMALE.—Face bearing four, rarely three, small setae.

TYPE-DATA.—Holotype ♂ and allotype ♀ from Mexico: Chiapas, near junction of Rts. 190 and 200, May 21, 1963, H. Robinson (USNM 69431). Paratypes: same data as holotype, 7 ♂ and 3 ♀; Guerrero, Rio Papagayo near Tierra Colorado, May 29, 1963, H. Robinson, 1 ♀.

Harmstonia pallida, new species

FIGURE 5

MALE.—Length 1.00 mm; wing 1.25 mm by 0.49 mm. Front yellowish gray; antennal segment 3 short, rounded. Tarsi from

tips of basitarsi brownish, legs otherwise yellow; middle femur with a weak preapical; fore- and hind tibiae without prominent dorsals or apicals, middle tibia with a weak anterodorsal and a weak posterodorsal near basal third; lengths of segments of foretarsus from base as .15–.06–.05–.05–.06 mm; middle tarsus as .19–.10–.08–.06–.07 mm; hind tarsus as .15–.17–.11–.08–.07 mm. Tips of wing veins 2 and 3 twice as far apart as tips of veins 3 and 4, vein 3 rather distinctly bending and becoming parallel with vein 4 distally; crossvein about as long as last of vein 5; knob of halter yellow. Hypopygium (fig. 5) ca. .21 mm long; hypopygial lamella pale, with a narrow pointed tip and slightly inflated base.

FEMALE.—Face bearing two or three small setae.

TYPE-DATA.—Holotype ♂ and allotype ♀ from Mexico: San Luis Potosi, El Salto, on limestone deposits in river below upper falls, May 9, 1963, H. Robinson (USNM 69432). Paratypes: same data as holotype, 18 ♂ and 18 ♀.

NOTES.—*H. pallida*, in spite of superficial resemblance to *H. attenuata* and *H. clavicauda*, seems more closely related to *H. pectinicauda* and *H. simplex*. The rounded third antennal segment of *H. pallida* seems rather distinctive. The antenna of *H. obscura* seems similar, but that species is very different in other characters including the structure of the hypopygial lamella.

Harmstonia attenuata, new species

FIGURE 6

MALE.—Length 1.06 mm; wing 1.17 mm by 0.42 mm. Front brown; antennal segment 3 not visible. Tarsi from tips of basitarsi brownish, legs otherwise yellow; middle femur with a weak preapical; fore- and hind tibiae without prominent dorsals or apicals, middle tibia with a weak anterodorsal and a weak posterodorsal near basal third; lengths of segments of foretarsus from base as .13–.06–.05–.05–.06 mm; middle tarsus as .17–.08–.06–.05–.06 mm; hind tarsus as .13–.17–.11–.08–.07 mm. Tips of wing veins 2 and 3 are 1½ to 2 times as far apart as tips of veins 3 and 4, vein 3 bending slightly and becoming nearly parallel with vein 4 distally; crossvein slightly shorter than last of vein 5; knob of halter yellow. Abdomen curving distinctly downward; hypopygium (fig. 6) mounted directly on apex of abdomen, ca. .25 mm long; hypopygial lamella with a very long and narrow tip, bearing a few slender projections on distal part of lower edge, with a large densely pubescent lobe near base, without inflated area at base.

FEMALE.—Face bearing four small setae; antennal segment 3 short and truncate apically.

TYPE-DATA.—Holotype ♂ and allotype ♀ from Mexico: Guerrero, Rio Papagayo near Tierra Colorado, May 29, 1963, H. Robinson (USNM 69433). Paratypes: same data as holotype, 7 ♀.

NOTES.—*H. attenuata* is related very closely to the more widely distributed *H. clavicauda*, showing among other things the same curved abdomen with the more apically positioned hypopygium, and similar pubescent lobes on uninflated bases of the hypopygial lamellae. The only obvious difference between the species is in the very differently shaped apex of the hypopygial lamellae. At present I know of no differences between the females of the two species and I cannot be certain the associated females are not specimens of *H. clavicauda*. When more male specimens are available, the lack of distinct dorsals on the hind tibia as seen in the holotype may prove to be significant.

***Harmstonia clavicauda*, new species**

FIGURE 7

MALE.—Length 1.00 mm; wing 1.17 mm by 0.42 mm. Front brown; antennal segment 3 short, rather obliquely truncate with lower corner somewhat produced. Bases of coxae and tarsi from tips of basitarsi brownish, femora very slightly infuscated, legs otherwise yellow; middle femur with a weak preapical; middle tibia with a weak anterodorsal and a weak posterodorsal near basal third, hind tibia with a few weak dorsals, tibiae otherwise without prominent dorsals or apicals; lengths of segments of foretarsus from base as .13–.05–.05––.05–.05 mm; middle tarsus as .19–.11–.08–.06–.06 mm; hind tarsus as .13–.19–.11–.07–.06 mm. Tips of wing veins 2 and 3 are 1⅓ to 1½ times as far apart as tips of veins 3 and 4, vein 3 bending slightly and becoming nearly parallel with vein 4 distally; crossvein ⅗ as long as, to as long as, last of vein 5; knob of halter yellow. Abdomen curving distinctly downward; hypopygium (fig. 7) mounted directly on apex of abdomen, ca. .21 mm long; hypopygial lamella with a short hooked tip, with a large densely pubescent lobe on lower margin, without inflated area at base.

FEMALE.—Face bearing four small setae.

TYPE-DATA.—Holotype ♂ and allotype ♀ from Mexico: Chiapas, May 22, 1963, H. Robinson (USNM 69434). Paratypes: same data as holotype, 1 ♂ and 1 ♀; Veracruz, near Santiago Tuxtla, Aug. 8, 1962, 6 ♂ and 2 ♀; Morelos, near Cuernavaca, May 28, 1963, 2 ♂ and 3 ♀; all collected by H. Robinson.

Group II

Tibiae bearing strong setae or distinct rows of setae, hind tibia without distinct apicals or ventrals, hypopygial lamellae broadly oval

to elliptical with the surface glabrous. The group contains the following four species.

Harmstonia megalopyga, new species

FIGURE 8

MALE.—Length 1.60 mm; wing 1.60 mm by 0.57 mm. Face very narrow but distinct to the mouth, whitish pollinose; front grayish; antennal segment 3 short, truncate with lower corner slightly produced. Legs brown to blackish; middle femur with preapical, hind femur with preapical often preceded by second smaller seta and with row of distinct setae along anteroventral surface; foretibia with five to six slender anterodorsals, middle tibia with a large anterodorsal and a large posterodorsal near basal third, hind tibia with eight or more slender posterodorsals, tibiae without distinct apicals; lengths of segments of foretarsus from base as .25–.12–.06–.06–.08 mm, basitarsus with about five slender erect setae below; middle tarsus as .23–.11–.08–.05–.07 mm; hind tarsus as .17–.21–.11–.08–.08 mm. Tips of wing veins 2 and 3 are 1¼ times as far apart as tips of veins 3 and 4, veins 2 and 3 curved slightly back distally, vein 4 curved slightly forward and becoming parallel with vein 3 distally; crossvein 1¼ to 1½ times as long as last of vein 5; knob of halter fuscous yellow. Hypopygium (fig. 8) ca. .65 mm long; hypopygial lamella elliptical from a tapered base, pale and nearly hyaline, outer or lower margin bearing a fringe of long setae, a pair of large black marginal setae from near base, cucullate tip of lamella with a small included appendage.

FEMALE.—Face bearing four to six rather strong setae, rarely only three; hind femur without distinct setae below.

TYPE-DATA.—Holotype ♂ and allotype ♀ from Mexico: San Luis Potosi, small ravine a few km south of Tamazunchale, on surface of moist limestone, Aug. 4–5, 1962, H. Robinson (USNM 69435). Paratypes: same data as holotype, 2 ♂ and 4 ♀; Chiapas, Ixtapan, on moist limestone at roadside above river, May 23, 1963, H. Robinson, 1 ♂ and 3 ♀.

NOTES.—The species is the largest known in the genus. In addition, the hypopygium is disproportionately large.

The elliptical cucullate hypopygial lamella as seen in this group seems homologous to the inflated basal area evident in most of the species of Group I. The small included apical lobe found in the *H. megalopyga* group seems homologous to the apical part of the lamella that is prominent in the species of Group I.

Harmstonia setosa, new species

FIGURE 9

MALE.—Length 1.21 mm; wing 1.21 mm by 0.50 mm. Front gray; antennal segment 3 short, rather truncate, rounded and slightly produced below. Trochanters, tibiae, and all but tips of basitarsi yellowish, legs otherwise brown; middle femur with preapical; hind femur with many close-set long setae along distal half of posteroventral surface; foretibia with two to three slender anterodorsals, middle tibia with a large anterodorsal and a large posterodorsal near basal third, hind tibia with 5 prominent posterodorsals, tibiae without distinct apicals; lengths of segments of foretarsus from base as .18–.09–.07–.05–.05 mm; middle tarsus as .21–.09–.07–.05–.06 mm; hind tarsus as .15–.18–.12–.07–.07 mm. Tips of wing veins 2 and 3 are 1⅓ times as far apart as tips of veins 3 and 4, vein 3 curved slightly backward to become nearly parallel with vein 4 distally; crossvein slightly longer than last of vein 5; knob of halter blackish. Hypopygium (fig. 9) ca. .36 mm long; hypopygial lamella oval from a tapered base, pale and nearly hyaline, surface glabrous, outer margin bearing a fringe of long setae, cucullate tip of lamella bearing a large falcate appendage toward inside.

FEMALE.—Face bearing three to four setae, upper 1 or 2 usually smaller; hind femur without distinct setae posteroventrally.

TYPE-DATA.—Holotype ♂ from Mexico: Hidalgo, near Chapulhuacan, on wet rock face above roadside spring, Aug. 5, 1962, H. Robinson (USNM 69436). Allotype ♀: same locality, Aug. 13, 1962. Paratypes: same locality as holotype, Aug. 5, 13, 1962, 10 ♂ and 8 ♀; San Luis Potosi, a few km south of Tamazunchale, on moist limestone in small ravine, Aug. 4, 1962, 1 ♂; all collected by H. Robinson.

Harmstonia costaricensis, new species

FIGURE 10

MALE.—Length 1.00 mm; wing 1.25 mm by 0.49 mm. Front brownish gray; antennal segment 3 short, obliquely truncate with lower corner projecting. Tarsi from tip of basitarsi brownish, femora and bases of coxae slightly infuscated, legs otherwise yellowish; middle and hind femora with preapical, hind femur with sparse longer setae along posteroventral surface; foretibia with four black anterodorsals, middle tibia with a large anterodorsal and a large posterodorsal near basal third, hind tibia with two to six weak posterodorsals; lengths of segments of foretarsus from base as .17–.06–.05–.04–.05 mm; middle tarsus a .19–.08–.06–.04–.06 mm; hind tarsus as .13–.14–.08–.06–.07 mm. Tips of wing veins 2 and 3 are 1⅓ times as far apart as tips of veins 3 and 4, veins 2 and 4 essentially straight, vein 3 slightly

curved and becoming nearly parallel with vein 4 distally; crossvein as long as last of vein 5; knob of halter black. Hypopygium (fig. 10) ca. .32 mm long; hypopygial lamella oval from a tapered base, pale and nearly hyaline, surface glabrous, outer margin bearing a fringe of long setae, cucullate tip of lamella bearing a large falcate appendage toward inside.

FEMALE.—Unknown.

TYPE-DATA.—Holotype ♂ from Costa Rica: La Suiza de Turrialba, July 1922, Pablo Schild (USNM 69437). Paratypes: same data as holotype, 3 ♂; all in A. L. Melander Collection in USNM.

NOTES.—*H. costaricensis* is very closely related to *H. setosa* of Mexico; nevertheless, there are slight but consistent differences in the form of the hypopygial lamella and in the pubescence of the hind femur. There also seem to be slight differences in the form of the third antennal segment. The legs of *H. costaricensis* seem rather pale but this may be partly due to the age of the specimens.

***Harmstonia ornata*, new species**

FIGURE 11

MALE.—Length 1.17 mm; wing 1.37 mm by 0.49 mm. Front grayish; antennal segment 3 short, rather truncate, rounded and slightly produced below. Trochanters, knees, and basitarsi except tips yellow, legs otherwise brownish to blackish; middle and hind femora with a small preapical, without noticeable distinct ventral setae; foretibia with five or more slender anterodorsals, middle tibia with a large anterodorsal and a large posterodorsal near basal third, hind tibia with six or more slender posterodorsals, tibiae without distinct apicals; lengths of segments of foretarsus from base as .17–.08–.06–.04–.06 mm; middle tarsus as .19–.08–.06–.04–.06 mm; hind tarsus as .15–.19–.11–.06–.08 mm. Tips of wing veins 2 and 3 are 1¼ times as far apart as tips of veins 3 and 4, vein 3 curved slightly backward to become nearly parallel with vein 4 distally; crossvein as long as to slightly longer than last of vein 5; knob of halter yellow, stalk infuscated. Hypopygium (fig. 11) ca. .32 mm long; hypopygial lamella elliptical from a tapered base, pale brownish, in part nearly hyaline, surface glabrous, outer margin bearing a few prominent setae along distal part, most basal of these setae very long and thickened toward the tip, cucullate tip of lamella bearing a small included appendage.

FEMALE.—Face bearing usually three, more rarely up to five, small setae.

TYPE-DATA.—Holotype ♂ and allotype ♀ from Mexico: Guerrero, May 29, 1963, H. Robinson (USNM 69438). Paratypes: same data as holotype, 6 ♂ and 3 ♀.

NOTE.—The male of *H. ornata* is recognizable easily by the long retrorsely directed setae on the hypopygial lamella with one of the setae having an enlarged tip.

Group III

Tibiae bearing strong setae or distinct rows of setae, hind tibia with distinct apicals or ventrals, hypopygial lamellae broad with hairs on the surface. The group contains the following two species.

Harmstonia recta, new species

FIGURE 12

MALE.—Length 1.25 mm; wing 1.60 mm by 0.27 mm. Face very narrow but distinct to mouth; front grayish; antennal segment 3 short, rather truncate with lower corner slightly projecting. Trochanters, tibiae, and bases of fore- and middle basitarsi pale, legs otherwise brown to blackish; middle and hind femora with a preapical bristle, hind femur with setae somewhat longer along antero- and posteroventral surfaces; foretibia with three stout anterodorsals and an apical ventrally, middle tibia with an anterodorsal and a posterodorsal near basal third, an anterodorsal near distal third, three distinct apicals of which ventral 2 are larger, hind tibia with an anterodorsal near tip, five stout posterodorsals, three stout anteroventrals along distal half, a series of erect hairs posteroventrally that seem to continue along basitarsus, three apicals; lengths of segments of foretarsus from base as .19–.11–.06–.04–.06 mm; middle tarsus as .20–.09–.06–.04–.06 mm; hind tarsus as .17–.19–.09–.05–.07 mm. Tips of wing veins 2 and 3 are 1⅓ to 1½ times as far apart as tips of veins 3 and 4, vein 3 curved slightly backward to become nearly parallel with vein 4 distally; crossvein 1⅓ to 1½ times as long as last of vein 5; knob of halter yellow. Abdomen straight, hypopygium (fig. 12) ca. .32 mm long, directed downward; hypopygial lamella rather triangular, yellowish, bearing hairs on surface and longer hairs along margin.

FEMALE.—Face bearing two slender setae; hind femur without longer ventral setae.

TYPE-DATA.—Holotype ♂ from Mexico; Hidalgo, near Chapulhuacan, on wet rock face above roadside spring, Aug. 5, 1962, H. Robinson (USNM 69439). Allotype ♀: San Luis Potosi, a few km south of Tamazunchale, on moist limestone in small ravine, Aug. 4, 1962, H. Robinson. Paratypes: same locality as holotype, Aug. 5, 13, 10 ♂; same locality as allotype, Aug. 4, 5, 2 ♀; all in 1962, collected by H. Robinson.

NOTE.—*H. recta* is distinct from all other known species of the genus by having two rather than single anterodorsals on the middle tibiae.

***Harmstonia pubescens*, new species**

FIGURE 13

MALE.—Length 1.30 mm; wing 1.80 mm by 0.33 mm. Face distinct to mouth, broadest of genus; front slightly brownish gray; antennal segment 3 very short, truncate. Tarsi from tips of basitarsi brownish, legs including coxae otherwise yellow; middle and hind femora with a preapical and with series of somewhat longer setae along anteroventral surfaces; foretibia with four to five stout black anterodorsals and a small apical ventrally, middle tibia with a large anterodorsal near middle and a large posterodorsal near basal third, two rather large apicals ventrally, hind tibia with an anterodorsal near tip, six stout black posterodorsals, two distinct ventrals at apex; lengths of segments of foretarsus from base as .15–.09–.07–.05–.07 mm; middle tarsus as .19–.13–.08–.06–.08 mm; hind tarsus as .15–.23–.13–.11–.08 mm. Tips of wing veins 2 and 3 are 1⅓ times as far apart as tips of veins 3 and 4, vein 3 curved slightly backward to become nearly parallel with vein 4 distally; crossvein 1¼ times as long as last of vein 5; knob of halter yellow. Hypopygium (fig. 13) ca. .32 mm long; hypopygial lamella very large, rather rounded, pale yellowish, in part nearly hyaline, bearing small hairs along the margin and on the surface.

FEMALE.—Unknown.

TYPE-DATA.—Holotype ♂ from Mexico: Chiapas, about 10 km southwest of Pichucalco, small roadside waterfall, on petiole of dead leaf on wet ledge, May 24, 1963, H. Robinson (USNM 69440). Paratypes: same data as holotype, 6 ♂.

NOTES.—Though closely related to *H. recta*, *H. pubescens* can be distinguished easily by the lack of a straight abdomen, by the larger rounded hypopygial lamellae, and by the generally yellower legs, in addition to having only the single anterodorsal on the middle tibia.

I consider that *H. recta* and *H. pubescens* represent a very distinct group within the genus. The setae of the tibiae and the broad hypopygial lamellae indicate relationship with Group II but details of structure of the hypopygial lamellae are very different. The lamellar structure of the Group III species does not suggest homology with the bulbous basal part of the *H. intricata* lamella.

All the specimens of *H. pubescens* were collected from the same

leaf petiole. Almost as soon as one was caught, another would alight. When the leaf was turned accidently so that the petiole no longer stood up, no more specimens could be found until the leaf was returned to its original position.

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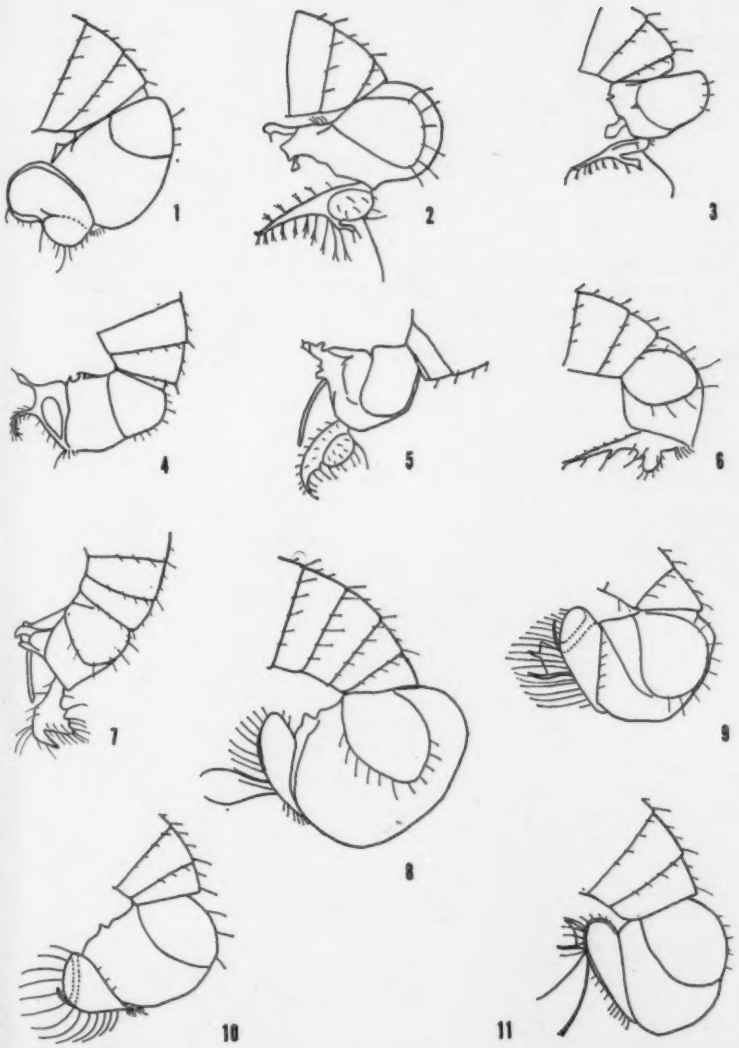
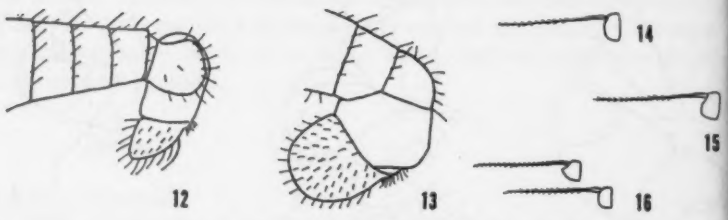


FIGURES 1–11.—*Harmstonia*, hypopygia: 1, *H. intricata* Robinson; 2, *H. pectinicauda* Robinson; 3, *H. simplex*, new species; 4, *H. obscura*, new species; 5, *H. pallida*, new species; 6, *H. attenuata*, new species; 7, *H. clavicauda*, new species; 8, *H. megalopyga*, new species; 9, *H. setosa*, new species; 10, *H. costaricensis*, new species; 11, *H. ornata*, new species.



FIGURES 12–16.—*Harmstonia*, hypopygia and antennae: 12, *H. recta*, new species; 13, *H. pubescens*, new species; 14, *H. intricata* Robinson, male; 15, *H. pectinicauda* Robinson, male; 16, *H. simplex*, new species, male and female.

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species; 13,
da Robinson,